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CLAIMS

1. A router comprising:

a first port configured to receive a frame having a network layer protocol identification;

a second port connectable to a Multi-Protocol Label  
5 Switching (MPLS) network; and

a circuit configured to (i) insert an MPLS label into said frame while retaining said network layer protocol identification and (ii) present said frame in said MPLS network per said MPLS label.

2. The router according to claim 1, wherein said circuit is further configured to:

receive a second frame having a second network layer protocol identification;

5 insert said MPLS label into said second frame while retaining said second network layer protocol identification; and

forward said second frame in said MPLS network in accordance with said MPLS label.

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3. The router according to claim 2, wherein said circuit is further configured to:

establish a path through said MPLS network prior to forwarding said frame;

5 transmit said frame along said path in response to establishing said path; and

transmit said second frame along said path in response to establishing said path.

4. The router according to claim 1, wherein said circuit is further configured to:

receive a second frame having a second MPLS label and a second network layer protocol identification;

5 remove said second MPLS label from said second frame in response to receiving said second frame; and

present said second frame external to said MPLS network in response to removing said second MPLS label.

5. The router according to claim 1, wherein said circuit is further configured to:

establish a traffic-engineered path through said MPLS network; and

5 transmit a plurality of frames having a plurality of protocol through said traffic-engineered path in response to establishing said traffic-engineered path.

6. The router according to claim 5, wherein said transmission through said traffic-engineered path is bidirectional.

7. The router according to claim 1, wherein the circuit is further configured to:

create an MPLS protocol identification field and an MPLS label stack field between a data link layer address field and a network layer protocol identification field in said frame; and

insert said MPLS label into said MPLS label stack in response to creating.

8. A method of operation in a Multi-Protocol Label Switching (MPLS) network comprising the steps of:

(A) receiving a frame having a network layer protocol identification;

5 (B) inserting an MPLS label into said frame while retaining said network layer protocol identification; and

(C) presenting said frame in said MPLS network per said MPLS label.

9. The method according to claim 8, further comprising the steps of:

receiving a second frame having a second network layer protocol identification;

inserting said MPLS label into said second frame while retaining said second network layer protocol identification; and

forwarding said second frame in said MPLS network in accordance with said MPLS label.

10. The method according to claim 9, further comprising the steps of:

establishing a path through said MPLS network prior to forwarding said frame;

5 transmitting said frame along said path in response to establishing said path; and

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transmitting said second frame along said path in response to establishing said path.

11. The method according to claim 8, further comprising the steps of:

receiving a second frame having a second MPLS label and a second network layer protocol identification;

removing said second MPLS label from said second frame in response to receiving said frame; and

presenting said second frame external to said MPLS network in response to removing said second MPLS label.

12. The method according to claim 8, further comprising the steps of:

establishing a traffic-engineered path through said MPLS network; and

5 transmitting a plurality of frames having a plurality of protocol through said traffic-engineered path in response to establishing said traffic-engineered path.

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13. The method according to claim 12, wherein transmitting through said traffic-engineered path is bidirectional.

14. The method according to claim 8, wherein step (B) comprises the sub-steps of:

creating an MPLS protocol identification field and an MPLS label stack field between a data link layer address field and a network layer protocol identification field in said frame; and

inserting said MPLS label into said MPLS label stack in response to creating.

15. The method according to claim 8, wherein said MPLS network is defined by a Request For Comment 3031 provided by an Internet Engineering Task Force.

16. The method according to claim 8, wherein said steps (A) through (C) are stored in a storage medium as a software program that is readable and executable by a router to insert said frame into said MPLS network.

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17. A router comprising:

means for receiving a frame having a network layer  
protocol identification;

means for inserting a Multi-Protocol Label Switching  
5 (MPLS) label into said frame while retaining said network layer  
protocol identification; and

means for forwarding said frame in an MPLS network per  
said MPLS label.